



Mini-Circuits

MMIC SURFACE MOUNT

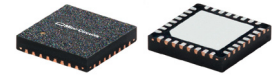
# Power Splitter/Combiner

EP2W1+

2 Way-0° 50Ω 0.5 to 9.5 GHz

## THE BIG DEAL

- Ultra-Wide Bandwidth, 0.5 to 9.5 GHz
- Excellent Amplitude Unbalance, 0.1 dB Typ. to 6 GHz
- Good Phase Unbalance, 1 to 3 Deg. Typ.
- Small Size, 5x5 mm QFN-Style Package
- Aqueous Washable
- DC Passing



Generic photo used for illustration purposes only

CASE STYLE: DG1677-2

### +RoHS Compliant

The +Suffix identifies RoHS Compliance. See our website for RoHS Compliance methodologies and qualifications

## APPLICATIONS

- WIMAX
- ISM
- Instrumentation
- Radar
- WLAN
- Satellite Communications
- LTE

## PRODUCT OVERVIEW

Mini-Circuits' EP2W1+ is a MMIC 2-way 0° splitter/combiner designed for wideband operation from 0.5 to 9.5 GHz supporting many applications requiring high performance across a wide frequency range including all the LTE bands through WiMax and WiFi, as well as instrumentation and more. This model provides excellent power handling up to 2.5 W (as a splitter) with low insertion loss, good isolation, and low phase and amplitude unbalance in a tiny 5x5 mm QFN-style package. Manufactured using GaAs IPD technology, the EP2W1+ provides a high level of ESD protection and excellent repeatability.

## KEY FEATURES

Feature	Advantages
Wideband, 0.5 to 9.5 GHz	One power splitter can be used in all the LTE bands through WiMax and WiFi, saving component count. Also ideal for wideband applications such as military and instrumentation.
Excellent Power Handling <ul style="list-style-type: none"><li>• 2.5 W as a Splitter</li><li>• 1.7 W Internal Dissipation as a Combiner</li></ul>	In power combiner applications, half the power is dissipated internally. EP2W1+ is designed to handle 1.7 W internal dissipation as a combiner allowing reliable operation without excessive temperature rise. Similar splitters implemented as Wilkinson splitters on PCB require big resistors and additional heat sinking. As a splitter, EP2W1+ can handle up to 2.5 W in a very small package.
DC Passing Up to 0.4A	DC current passing is helpful in applications where both RF & DC need to pass through the DUT, such as antenna mounted hardware.
Tiny Size, 5x5 mm QFN-Style Package	Tiny footprint saves space in dense layouts while providing low inductance, repeatable transitions, and excellent thermal contact to the PCB.





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ELECTRICAL SPECIFICATIONS<sup>1</sup> AT +25°C

Parameter	Frequency (GHz)	Min.	Typ.	Max.	Unit
Frequency Range		0.5		9.5	GHz
Insertion Loss <sup>2</sup> , Above 3.0 dB	0.5-1.5		1.0	1.5	dB
	1.5-3.0		1.3	1.9	
	3.0-6.0		1.8	2.5	
	6.0-9.5		3.4	4.5	
Isolation	0.5-1.5	6.3	9.3		dB
	1.5-3.0	16.8	19.8		
	3.0-6.0	16.4	19.4		
	6.0-9.5	7.0	10.2		
Phase Unbalance	0.5-1.5		0.5	2.5	Degree
	1.5-3.0		0.9	2.9	
	3.0-6.0		1.7	6.0	
	6.0-9.5		2.5		
Amplitude Unbalance	0.5-1.5		0.1	0.3	dB
	1.5-3.0		0.1	0.3	
	3.0-6.0		0.1	0.4	
	6.0-9.5		0.5		
VSWR (Port S)	0.5-1.5		1.6		:1
	1.5-3.0		1.5		
	3.0-6.0		1.6		
	6.0-9.5		1.7		
VSWR (Port 1-2)	0.5-1.5		1.3		:1
	1.5-3.0		1.3		
	3.0-6.0		1.4		
	6.0-9.5		1.5		

1. Tested on Mini-Circuits Evaluation Board TB-880W+.

2. Insertion Loss Values are de-embedded from Test Board Loss.

## ABSOLUTE MAXIMUM RATINGS

Parameter	Ratings
Operating Temperature	-40°C to +85°C
Storage Temperature	-65°C to +150°C
Power Input (as a Splitter)	2.5 W <sup>3</sup> max. at +25°C
Internal Dissipation	1.7 W <sup>4</sup> max. at +25°C
DC Current	0.4 A max.

3. Derate linearly to 1.25 W at +85°C.

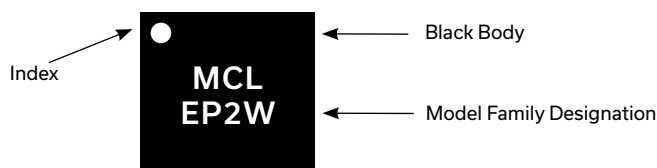
4. Derate linearly to 1.1 W at +85°C.

Permanent damage may occur if any of these limits are exceeded.

## PAD CONNECTIONS

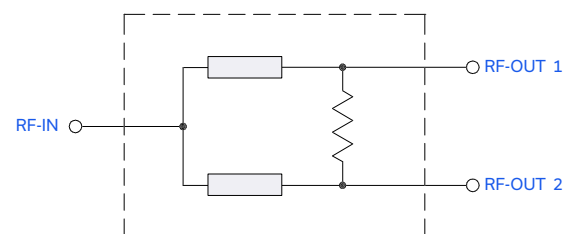
Function	Pad Number
SUM PORT	4
PORT 1	15
PORT 2	26
NOT USED, GROUND, EXTERNALLY	1-3, 5-14, 16-25, 27-32 & Paddle

## PRODUCT MARKING



Marking may contain other features or characters for internal lot control.

## SIMPLIFIED ELECTRICAL SCHEMATIC



Mini-Circuits

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ADDITIONAL DETAILED TECHNICAL INFORMATION IS AVAILABLE ON OUR DASHBOARD. TO ACCESS [CLICK HERE](#)

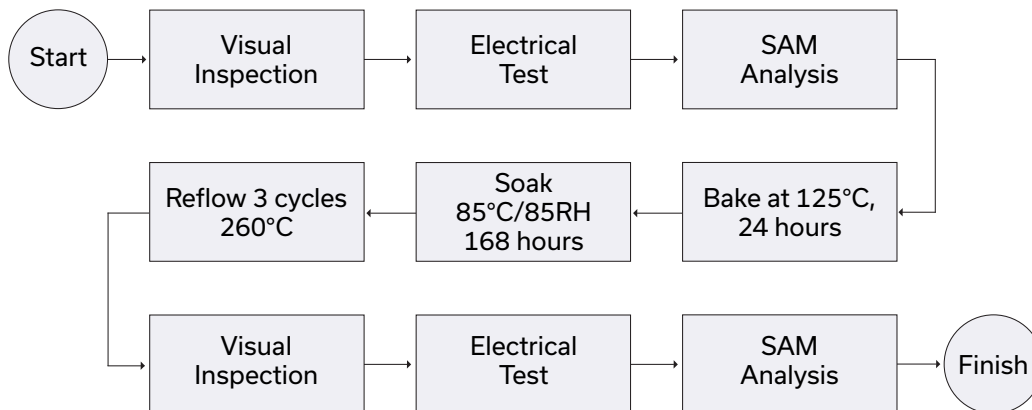
Performance Data	Data Table
	Swept Graphs
	S-Parameter (S3P Files) Data Set (.zip file)
Case Style	DG1677-2 Plastic package, exposed paddle; Lead Finish: Matte Tin
Tape & Reel Standard Quantities Available on Reel	F68 7" Reels with 20, 50, 100, 200, 500 & 1000 devices 13" Reels with 2000, 3000 & 4000 devices
Suggested Layout for PCB Design	PL-488
Evaluation Board	TB-880W+
Environmental Ratings	ENV08T1

## ESD RATING

Human Body Model (HBM): Class 2 (Pass 2000 V) in accordance with ANSI/ESD STM 5.1 - 2001

Machine model: Class M3 (200 V to &lt;4000 V) in accordance with ANSI/ESD 5.2-2009

## MSL TEST FLOW CHART



## NOTES

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
- B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
- C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the standard terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at [www.minicircuits.com/terms/viewterm.html](http://www.minicircuits.com/terms/viewterm.html)

